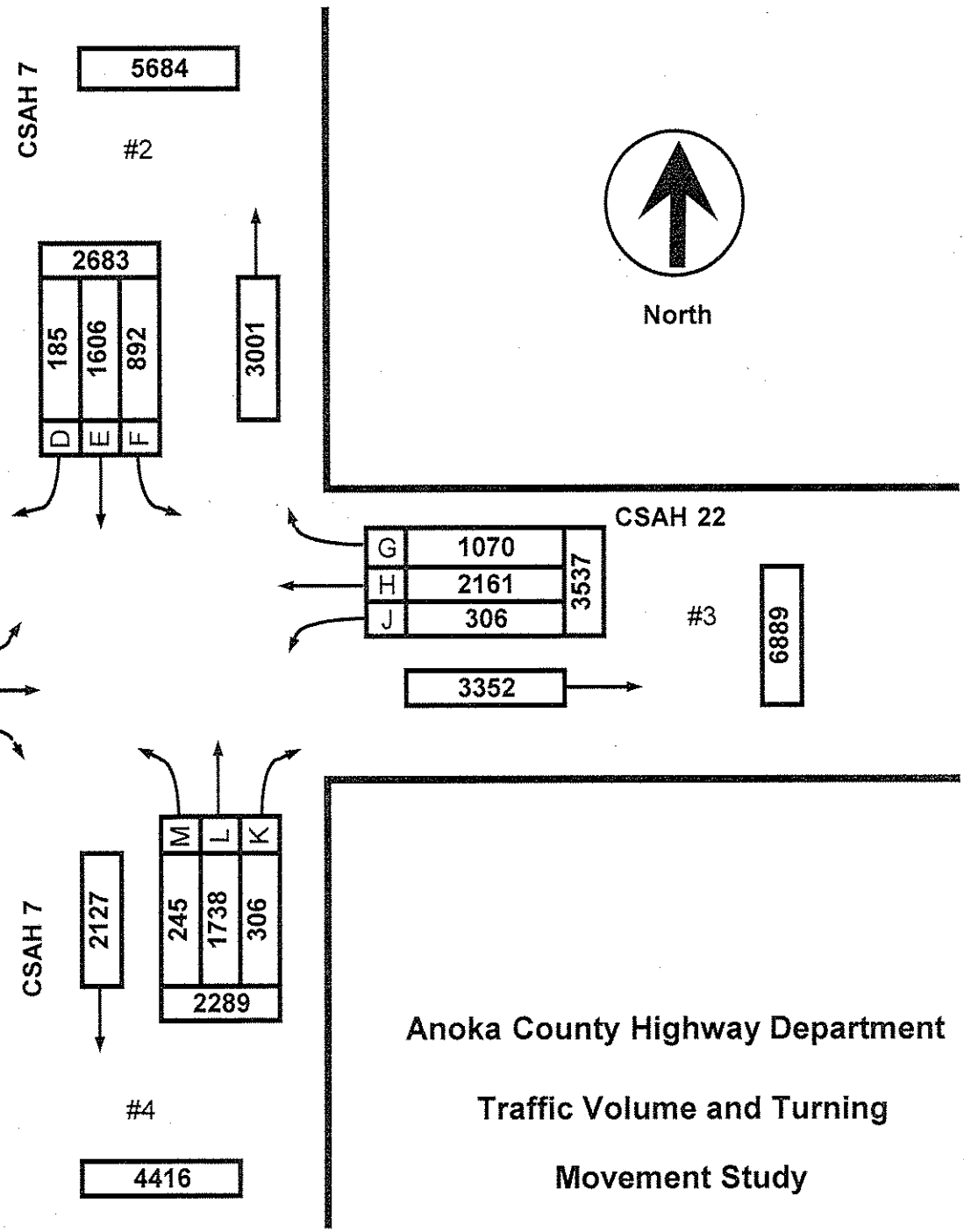


Date : 07/02/13

Count Number : TMC1323

Location : CSAH 22 (Viking Blvd.)
@ CSAH 7 (Rum River Blvd.)

Collection Period : 6 AM - 10 PM



EXISTING LANES OF APPROACH

	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	TOTAL
#1	1	0	1	2
#2	1	0	1	2
#3	1	0	1	2
#4	1	0	1	2

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Date : 07/02/13

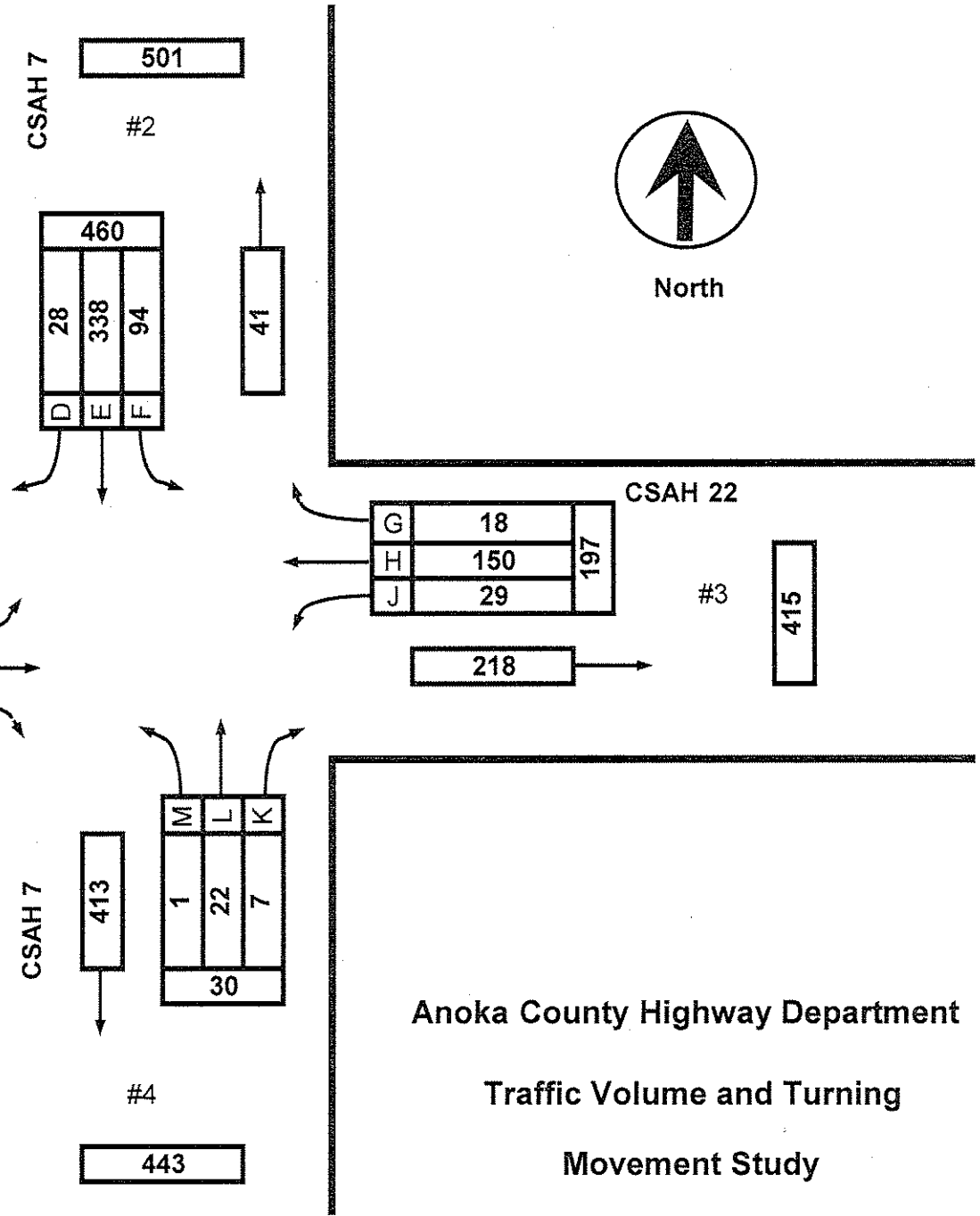
Count Number : TMC1323

Location : CSAH 22 (Viking Blvd.)

@ CSAH 7 (Rum River Blvd.)

Collection Period : AM PEAK

Hour : 6 AM - 7 AM



EXISTING LANES OF APPROACH				
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	TOTAL
#1	1	0	1	2
#2	1	0	1	2
#3	1	0	1	2
#4	1	0	1	2

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Date : 07/01/13

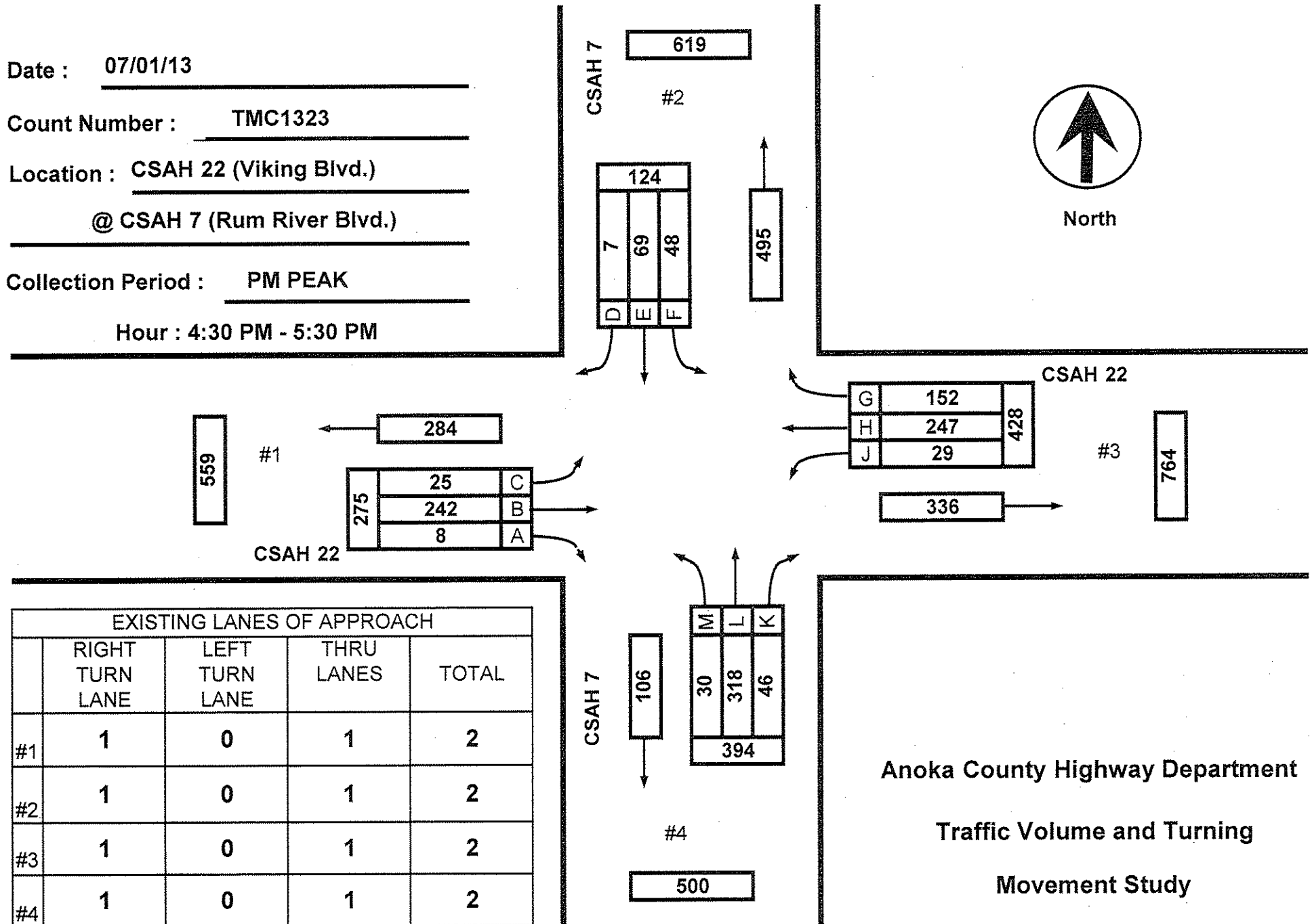
Count Number : TMC1323

Location : CSAH 22 (Viking Blvd.)

@ CSAH 7 (Rum River Blvd.)

Collection Period : PM PEAK

Hour : 4:30 PM - 5:30 PM



EXISTING LANES OF APPROACH				
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	TOTAL
#1	1	0	1	2
#2	1	0	1	2
#3	1	0	1	2
#4	1	0	1	2

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

File Name : TMC 1323
 Site Code : 13230202
 Start Date : 07/01/2013
 Page No : 2

Weather: Warm & Sunny
 Counter: DB-400
 study conducted by: Kate & Katelyn

Groups Printed- Unshifted

Start Time	CSAH 7 Southbound					CSAH 22 Westbound					CSAH 7 Northbound					CSAH 22 Eastbound					Excl. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total			
05:45 PM	18	20	5	1	43	8	46	31	3	85	12	61	3	2	76	7	37	5	1	49	7	253	260
Total	67	73	12	2	152	26	219	151	14	396	40	278	27	4	345	25	211	12	7	248	27	1141	1168
06:00 PM	15	24	4	1	43	5	49	27	0	81	9	54	7	2	70	6	55	4	0	65	3	259	262
06:15 PM	17	23	2	1	42	6	39	19	5	64	8	49	11	3	68	6	38	4	0	48	9	222	231
06:30 PM	12	19	4	1	35	4	38	22	1	64	7	37	3	1	47	3	34	1	2	38	5	184	189
06:45 PM	13	10	1	1	24	4	38	25	2	67	4	34	7	3	45	2	43	2	2	47	8	183	191
Total	57	76	11	4	144	19	164	93	8	276	28	174	28	9	230	17	170	11	4	198	25	848	873
07:00 PM	11	7	3	0	21	5	26	28	1	59	7	37	5	0	49	4	32	1	0	37	1	166	167
07:15 PM	18	15	1	0	34	7	19	23	0	49	5	42	5	1	52	1	31	4	0	36	1	171	172
07:30 PM	11	7	0	0	18	1	27	17	2	45	2	31	5	0	38	3	35	3	2	41	4	142	146
07:45 PM	6	8	2	1	16	6	26	23	0	55	1	20	2	1	23	6	25	4	2	35	4	129	133
Total	46	37	6	1	89	19	98	91	3	208	15	130	17	2	162	14	123	12	4	149	10	608	618
08:00 PM	9	13	2	0	24	2	15	17	0	34	2	13	2	1	17	0	26	3	1	29	2	104	106
08:15 PM	6	13	3	0	22	1	19	13	2	33	5	20	2	0	27	5	24	0	1	29	3	111	114
08:30 PM	12	7	4	0	23	4	29	14	1	47	3	23	6	3	32	0	13	1	0	14	4	116	120
08:45 PM	8	6	2	0	16	5	32	18	0	55	5	10	3	0	18	3	24	4	0	31	0	120	120
Total	35	39	11	0	85	12	95	62	3	169	15	66	13	4	94	8	87	8	2	103	9	451	460
09:00 PM	12	16	0	0	28	2	28	23	3	53	0	24	2	0	26	3	20	0	0	23	3	130	133
09:15 PM	8	12	3	0	23	2	20	12	0	34	0	25	6	2	31	2	33	1	3	36	5	124	129
09:30 PM	7	4	3	0	14	4	16	14	0	34	4	19	2	0	25	4	20	0	0	24	0	97	97
09:45 PM	6	7	0	0	13	3	23	13	2	39	2	15	4	0	21	4	14	0	0	18	2	91	93
Total	33	39	6	0	78	11	87	62	5	160	6	83	14	2	103	13	87	1	3	101	10	442	452
Grand Total	892	1606	185	90	2683	306	2161	1070	181	3537	245	1738	306	67	2289	193	2154	215	176	2562	514	11071	11585
Apprch %	33.2	59.9	6.9			8.7	61.1	30.3			10.7	75.9	13.4			7.5	84.1	8.4					
Total %	8.1	14.5	1.7		24.2	2.8	19.5	9.7		31.9	2.2	15.7	2.8		20.7	1.7	19.5	1.9		23.1	4.4	95.6	

Start Time	CSAH 7 Southbound				CSAH 22 Westbound				CSAH 7 Northbound				CSAH 22 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:00 AM																	
06:00 AM	28	84	5	117	5	28	3	36	1	7	2	10	0	16	12	28	191
06:15 AM	22	93	4	119	12	49	5	66	0	6	1	7	0	36	17	53	245
06:30 AM	25	87	16	128	3	41	5	49	0	6	2	8	0	24	9	33	218
06:45 AM	19	74	3	96	9	32	5	46	0	3	2	5	1	41	8	50	197
Total Volume	94	338	28	460	29	150	18	197	1	22	7	30	1	117	46	164	851
% App. Total	20.4	73.5	6.1		14.7	76.1	9.1		3.3	73.3	23.3		0.6	71.3	28		
PHF	.839	.909	.438	.898	.604	.765	.900	.746	.250	.786	.875	.750	.250	.713	.676	.774	.868

Start Time	CSAH 7 Southbound				CSAH 22 Westbound				CSAH 7 Northbound				CSAH 22 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 PM to 09:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	8	15	0	23	12	62	35	109	5	82	13	100	8	59	1	68	300
04:45 PM	8	21	2	31	5	72	34	111	9	85	15	109	6	55	4	65	316
05:00 PM	15	19	3	37	8	57	41	106	9	69	9	87	5	64	3	72	302
05:15 PM	17	14	2	33	4	56	42	102	7	82	9	98	6	64	0	70	303
Total Volume	48	69	7	124	29	247	152	428	30	318	46	394	25	242	8	275	1221
% App. Total	38.7	55.6	5.6		6.8	57.7	35.5		7.6	80.7	11.7		9.1	88	2.9		
PHF	.706	.821	.583	.838	.604	.858	.905	.964	.833	.935	.767	.904	.781	.945	.500	.955	.966



**ANOKA COUNTY HIGHWAY
PC-WARRANTS
TRAFFIC SIGNAL WARRANT ANALYSIS**

Study Name : TMC 1323
Study Date : 07/02/13
Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Eastbound: CSAH 22
Number of Lanes: 2
85% Speed > 40 MPH.
Total Approach Volume: 2,562

Westbound: CSAH 22
Number of Lanes: 2
85% Speed > 40 MPH.
Total Approach Volume: 3,537

Minor Street Approaches

Northbound: CSAH 7
Number of Lanes: 2

Total Approach Volume: 2,289

Southbound: CSAH 7
Number of Lanes: 2

Total Approach Volume: 2,683

Warrant Summary (Rural values apply.)

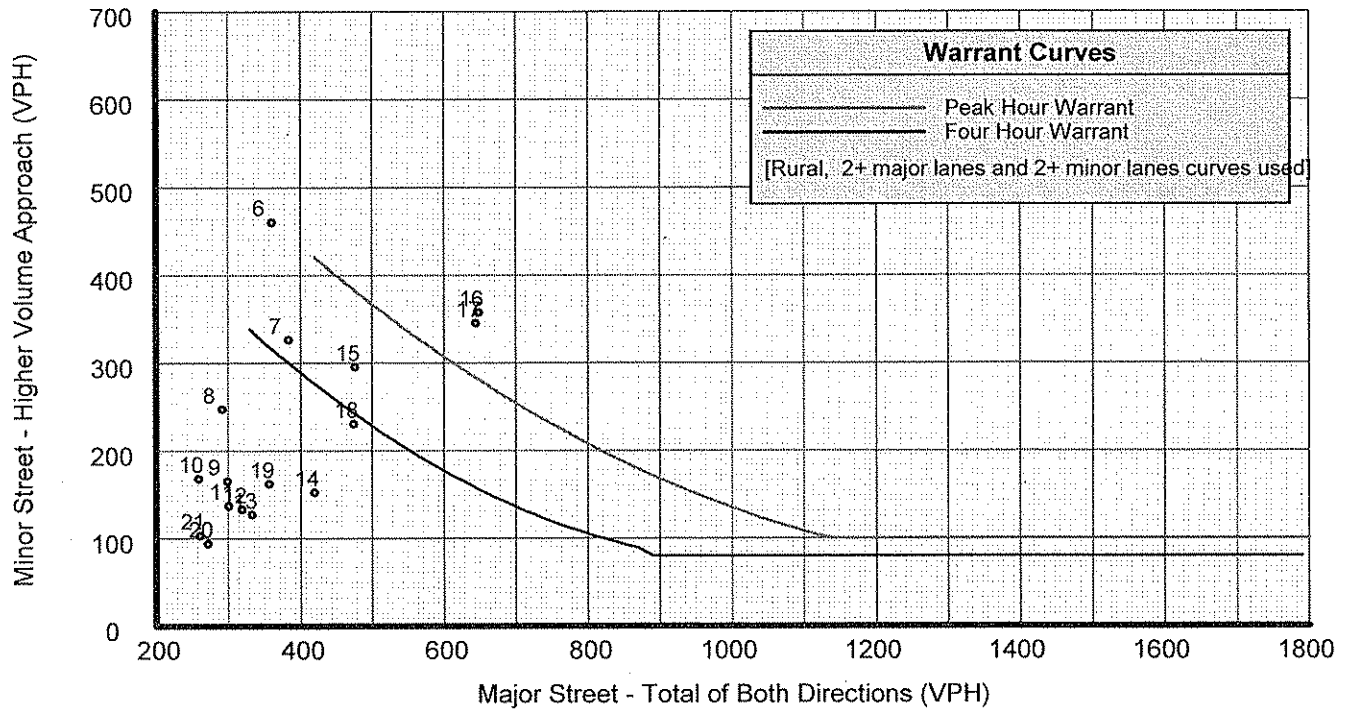
Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 4 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 2 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 2 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (5) volumes exceed minimum >= minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour Delay	Satisfied
Number of hours (13) volumes exceed minimum >= required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour Volumes	Satisfied
Volumes exceed minimums for at least one hour.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated



ANOKA COUNTY HIGHWAY PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC 1323
Study Date : 07/02/13
Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor Vol	Dir	War 1A			War 1B			War 1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
01:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
02:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
03:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
04:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
05:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
06:00	361	460	SB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
07:00	384	326	SB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
08:00	292	247	SB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
09:00	299	165	SB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
10:00	259	168	SB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
11:00	301	137	SB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-Yes	Minor
12:00	319	133	SB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-Yes	Minor
13:00	333	127	SB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-Yes	Minor
14:00	419	152	NB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
15:00	476	295	NB	420-Yes	140-Yes	Both	630-No	70-Yes	Minor	504-No	112-Yes	Minor
16:00	648	357	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
17:00	644	345	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
18:00	474	230	NB	420-Yes	140-Yes	Both	630-No	70-Yes	Minor	504-No	112-Yes	Minor
19:00	357	162	NB	420-No	140-Yes	Minor	630-No	70-Yes	Minor	504-No	112-Yes	Minor
20:00	272	94	NB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-No	---
21:00	261	103	NB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-No	---
22:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
23:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---



**ANOKA COUNTY HIGHWAY
PC-WARRANTS
TRAFFIC SIGNAL WARRANT ANALYSIS**

Study Name : TMC 1323 MW
Study Date : 07/02/13
Page No. : 1

Multi-Way Stop Warrant Report

Major Street Approaches

Eastbound: CSAH 22
Total Approach Volume: 2,562
85% Speed > 40 MPH.

Westbound: CSAH 22
Total Approach Volume: 3,537
85% Speed > 40 MPH.

Minor Street Approaches

Northbound: CSAH 7
Total Approach Volume: 2,289

Southbound: CSAH 7
Total Approach Volume: 2,683

Warrant Summary

Criteria A - Interim Measure Not Evaluated
If traffic signals are justified, stop signs can be installed as an interim measure.

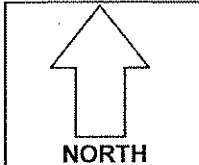
Criteria B - Crash Experience Not Evaluated

Criteria C - Minimum Volumes and Delays Satisfied
Delay data not evaluated
Required volumes reached for 16 hours, 8 are needed

Criteria D - 80% of Volumes, Delays, and Crashes Not Evaluated
Delay data not evaluated
Number of crashes (-1) is less than the minimum required (4).
Required volumes reached for 0 hours, 8 are needed

Analysis of 8 Hour Volume Warrants:

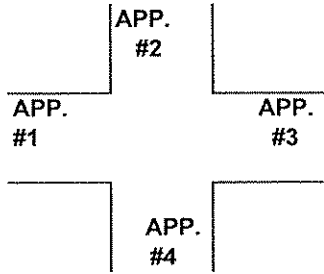
Time	Major Total	Minor Total	Crit C			Crit D		
			Major	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
05:45 - 06:45	265	389	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
06:45 - 07:45	400	436	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
07:45 - 08:45	290	305	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
08:45 - 09:45	309	247	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
09:45 - 10:45	278	228	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
10:45 - 11:45	283	197	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
11:45 - 12:45	321	207	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
12:45 - 13:45	329	245	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
13:45 - 14:45	405	279	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
14:45 - 15:45	414	377	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
15:45 - 16:45	621	440	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
16:45 - 17:45	686	518	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
17:45 - 18:45	494	424	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
18:45 - 19:45	381	281	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
19:45 - 20:45	276	184	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
20:45 - 21:45	290	181	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
00:00 - 01:00	0	0	210-No	140-No	No	240-No	160-No	No
00:15 - 01:15	0	0	210-No	140-No	No	240-No	160-No	No
00:30 - 01:30	0	0	210-No	140-No	No	240-No	160-No	No
00:45 - 01:45	0	0	210-No	140-No	No	240-No	160-No	No
01:00 - 02:00	0	0	210-No	140-No	No	240-No	160-No	No
01:15 - 02:15	0	0	210-No	140-No	No	240-No	160-No	No
01:30 - 02:30	0	0	210-No	140-No	No	240-No	160-No	No
01:45 - 02:45	0	0	210-No	140-No	No	240-No	160-No	No



COUNT LOCATION: CSAH 22 (Viking Blvd.)
@ CSAH 7 (Rum River Blvd.)

DATE: 07/02/2013

APP. #1 = CSAH 22
APP. #2 = CSAH 7
APP. #3 = CSAH 22
APP. #4 = CSAH 7



- HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT
- A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.
 - B. RV- A HEAVY VEHICLE OPERATED BY A PRIVATE MOTORIST AND INVOLVED IN THE TRANSPORT OF RECREATIONAL EQUIPMENT OR FACILITIES.
 - C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
6:00-6:15AM						6		
6:15-6:30						7		
6:30-6:45						11		1
6:45-7:00						10		
HOURLY TOTAL						HOURLY TOTAL		35
7:00-7:15						9		
7:15-7:30						10		
7:30-7:45						9		
7:45-8:00						7		2
HOURLY TOTAL						HOURLY TOTAL		37
8:00-8:15						16		1
8:15-8:30						8		
8:30-8:45	1				1	10	1	
8:45-9:00						10		2
HOURLY TOTAL					1	HOURLY TOTAL		48
9:00-9:15						9		
9:15-9:30						6		
9:30-9:45						14		2
9:45-10:00						13		1
HOURLY TOTAL						HOURLY TOTAL		45
10:00-10:15			2		2	6		
10:15-10:30				1	1	9		
10:30-10:45						10	1	
10:45-11:00						12		
HOURLY TOTAL					3	HOURLY TOTAL		38
11:00-11:15						8		
11:15-11:30						6	2	1
11:30-11:45						10		
11:45-12:00		1			1	3		
HOURLY TOTAL					1	HOURLY TOTAL		30
12:00-12:15	1				1	13		2
12:15-12:30						5	1	1
12:30-12:45		2			2	10	1	1
12:45-1:00						13		
HOURLY TOTAL					3	HOURLY TOTAL		47
1:00-1:15						5		
1:15-1:30						7		
1:30-1:45						4		
1:45-2:00						7		
HOURLY TOTAL						HOURLY TOTAL		23
TOTAL					8	TOTAL		303

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NORTH

COUNT LOCATION:

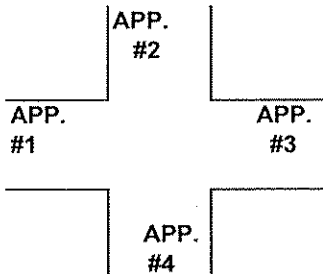
CSAH 22 (Viking Blvd.)

DATE:

07/01/2013

@ CSAH 7 (Rum River Blvd.)

APP. #1 = CSAH 22
APP. #2 = CSAH 7
APP. #3 = CSAH 22
APP. #4 = CSAH 7



- HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT**
- A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.
 - B. RV- A HEAVY VEHICLE OPERATED BY A PRIVATE MOTORIST AND INVOLVED IN THE TRANSPORT OF RECREATIONAL EQUIPMENT OR FACILITIES.
 - C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
2:00-2:15PM						9		1
2:15-2:30						9		
2:30-2:45						17		2
2:45-3:00						8		
HOURLY TOTAL						HOURLY TOTAL		46
3:00-3:15			2		2	14		
3:15-3:30						4		
3:30-3:45						8		
3:45-4:00						6		
HOURLY TOTAL					2	HOURLY TOTAL		32
4:00-4:15						10		
4:15-4:30				1	1	11		1
4:30-4:45						6		1
4:45-5:00		2			2	11		
HOURLY TOTAL					3	HOURLY TOTAL		40
5:00-5:15						7	1	
5:15-5:30				1	1	4		
5:30-5:45						6		1
5:45-6:00						6		
HOURLY TOTAL					1	HOURLY TOTAL		25
6:00-6:15	2				2	2		
6:15-6:30						9		1
6:30-6:45						5		
6:45-7:00						8		
HOURLY TOTAL					2	HOURLY TOTAL		25
7:00-7:15						1		
7:15-7:30			1		1	1		
7:30-7:45						4		
7:45-8:00	1				1	4		
HOURLY TOTAL					2	HOURLY TOTAL		10
8:00-8:15						2		
8:15-8:30				1	1	3		
8:30-8:45			1		1	4		
8:45-9:00		2			2			
HOURLY TOTAL					4	HOURLY TOTAL		9
9:00-9:15						3		
9:15-9:30			2		2	4		1
9:30-9:45								
9:45-10:00						2		
HOURLY TOTAL					2	HOURLY TOTAL		10
TOTAL					24	TOTAL		500

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